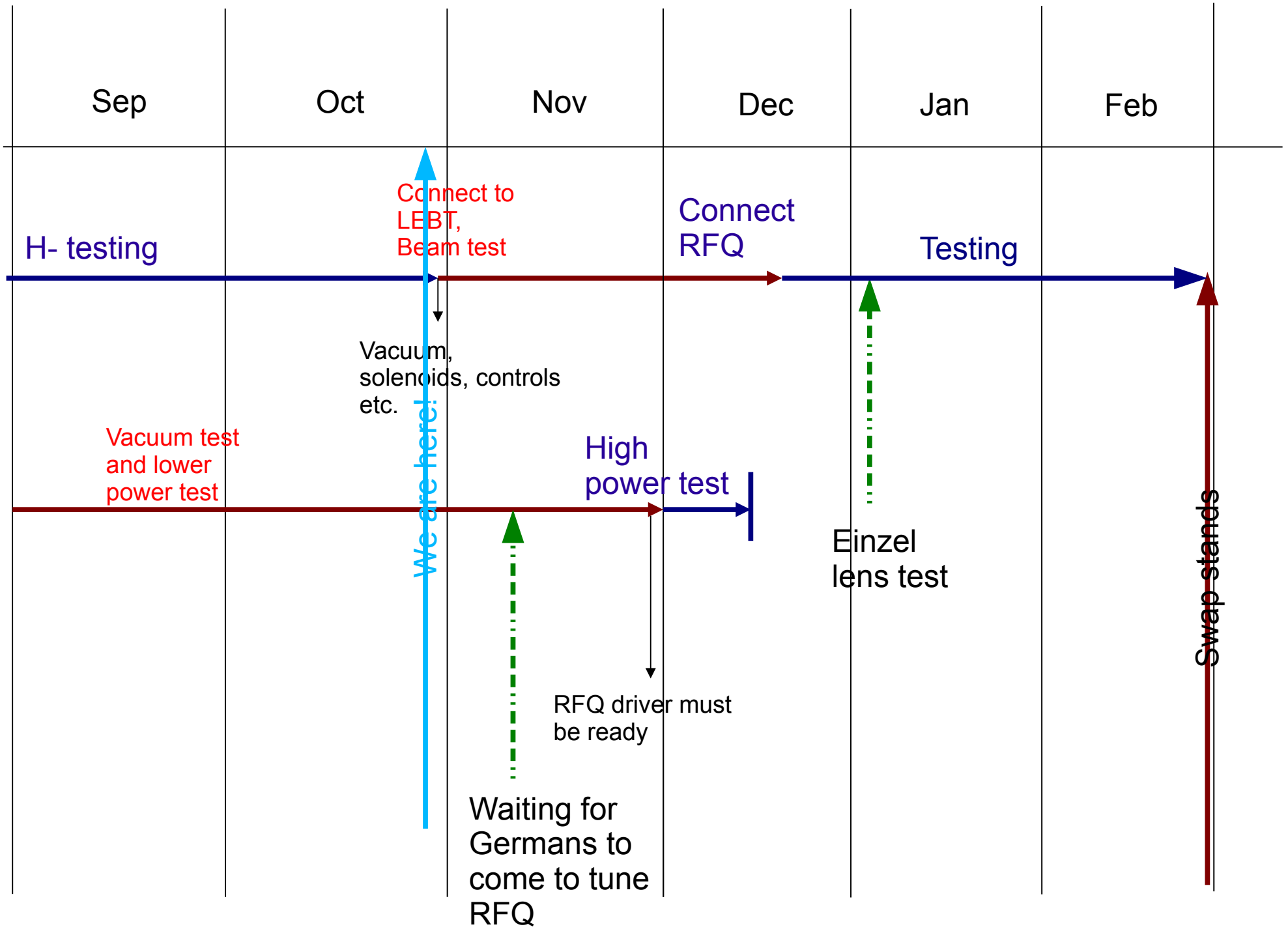
Pre-injector Upgrade Updates (12 Oct 2011 – 26 Oct 2011)

C.Y. Tan
26 Oct 2011

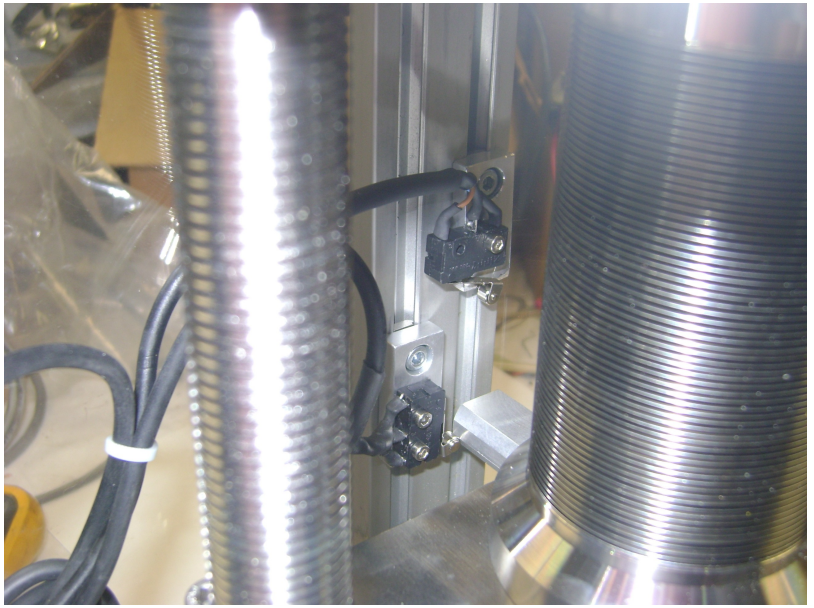

Sep
Oct
Nov
Dec
Jan
Feb
H- testing
Connect to LEBT, Beam test
Connect RFQ
Testing
Vacuum, solenoids, controls etc.
Vacuum test and lower power test
We are here!
High power test
Einzel lens test
Swap stands
RFQ driver must be ready
Waiting for Germans to come to tune RFQ

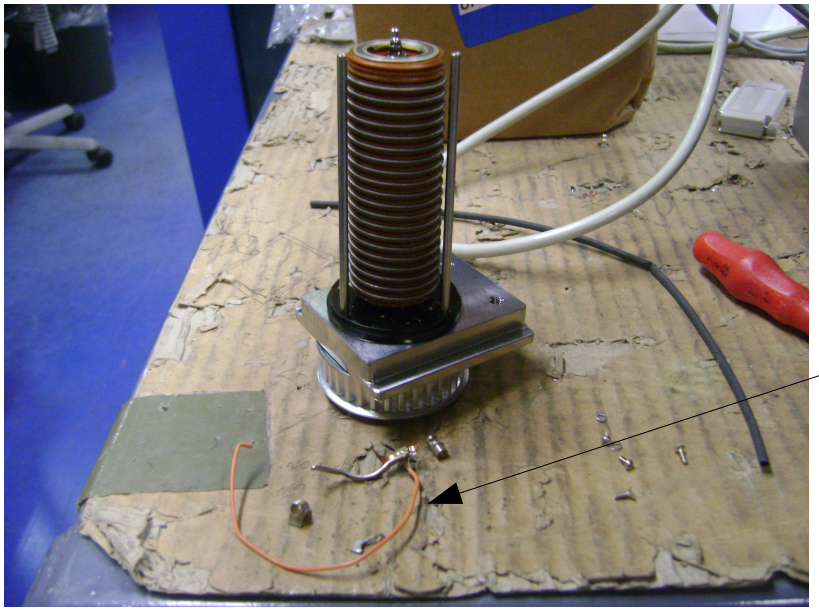

DANGER
HIGH VOLTAGE
DANGER
ELECTRICAL SHOCK HAZARD
BURNS MACHINE CO.

Latest

- LEBT line assembled (14 Oct 2011)
- Survey done (18 Oct 2011)
- Shimming (19 Oct 2011)
  - To correct 0.5” height difference between upstream and down stream flange at solenoid 2.
- Pumped down (20 Oct 2011)
- Water to solenoids from skid (20 Oct 2011)
- Solenoids tested to 200A (21 Oct 2011)

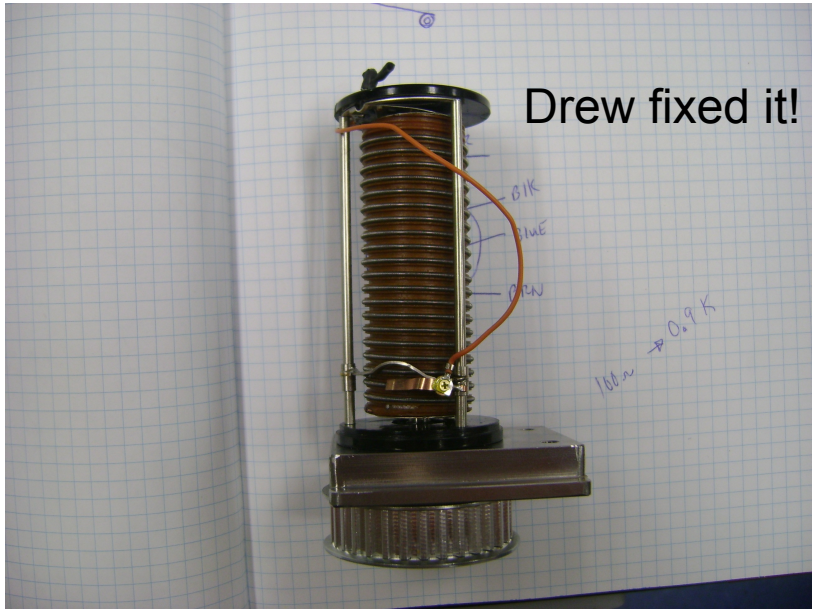
Drew saves Friday 14 Oct

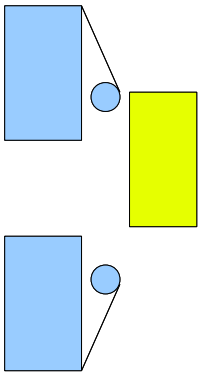




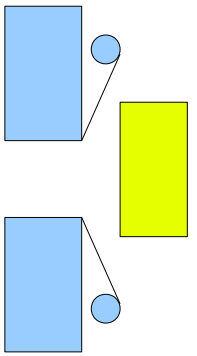
Oops!
Broke the pot!

Megatron 4620 pot. Unavailable in the US.



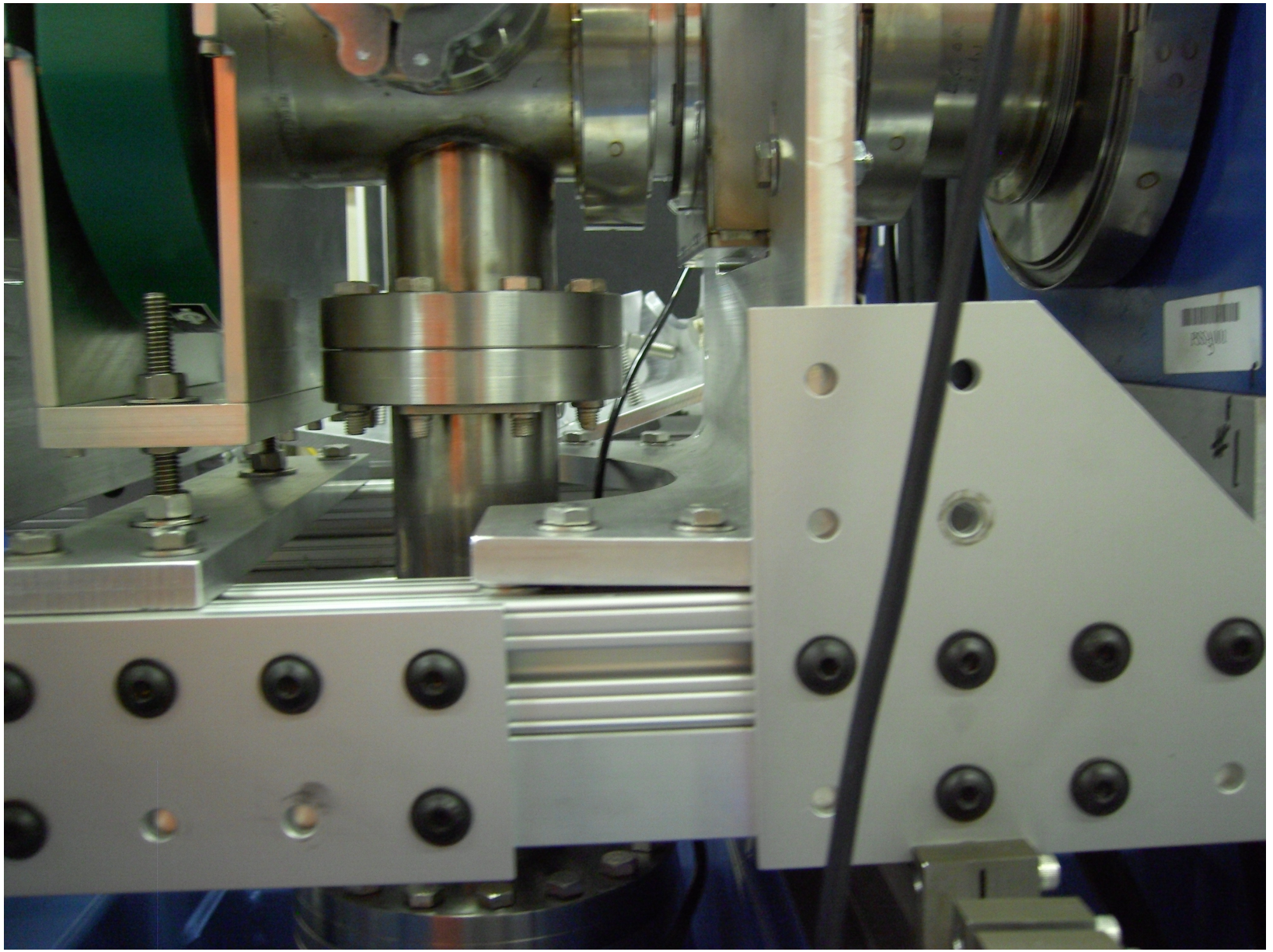


Switches mounted wrong!



Correct way of mounting

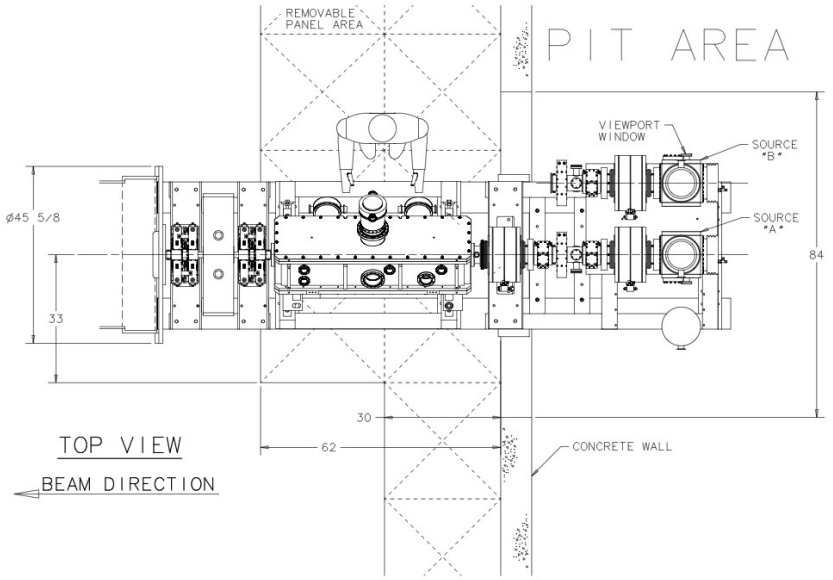
Shimming hell

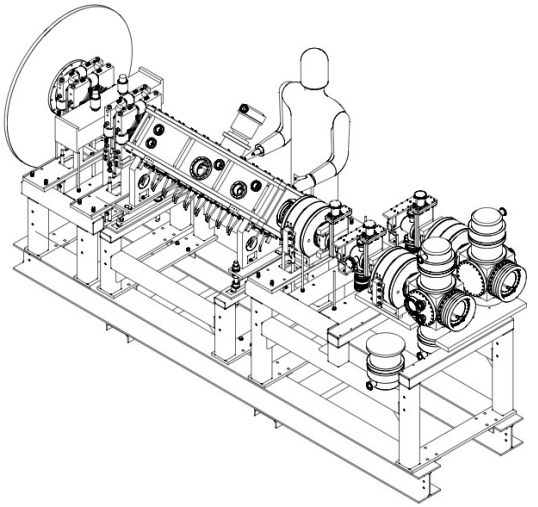


What's missing for first H-

- Installation of source in cube
- Controls in HV rack.
- Controls for vacuum. (Done ?)

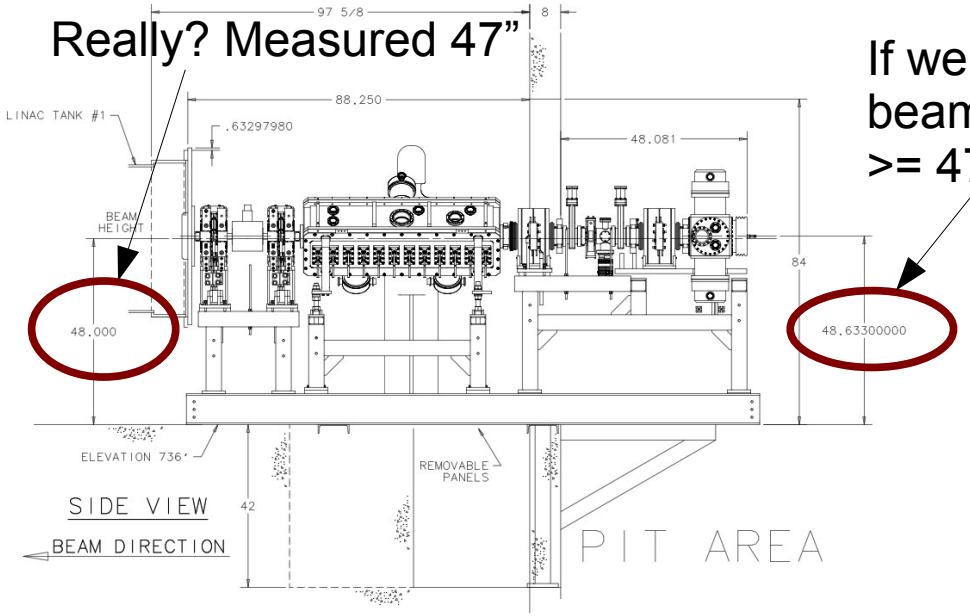
REV	DESCRIPTION	DRAWN	DATE
		APPROVED	DATE

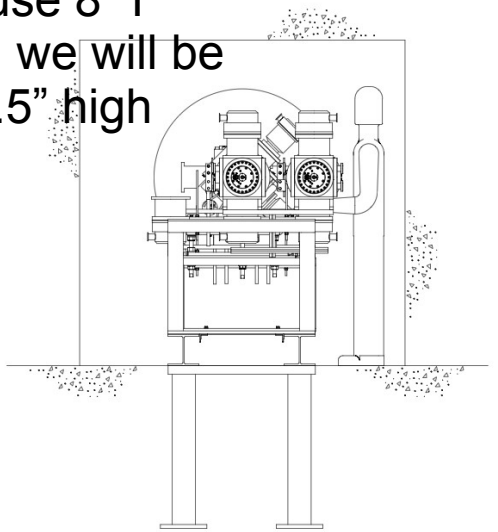




Really? Measured 47”

If we use 8” I beam, we will be >= 47.5” high





PREACCELERATOR PRELIMINARY LAYOUT

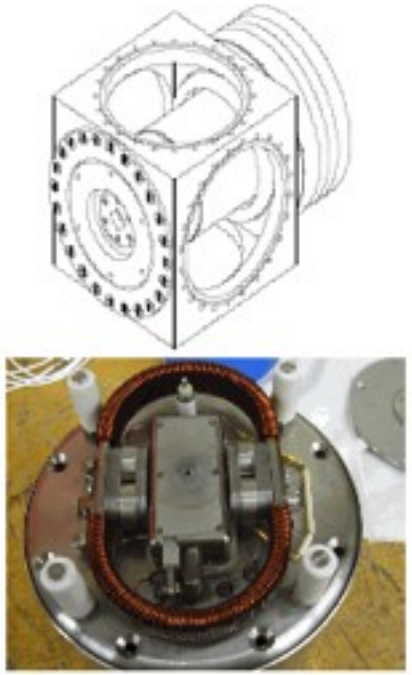
APRIL 27, 2011

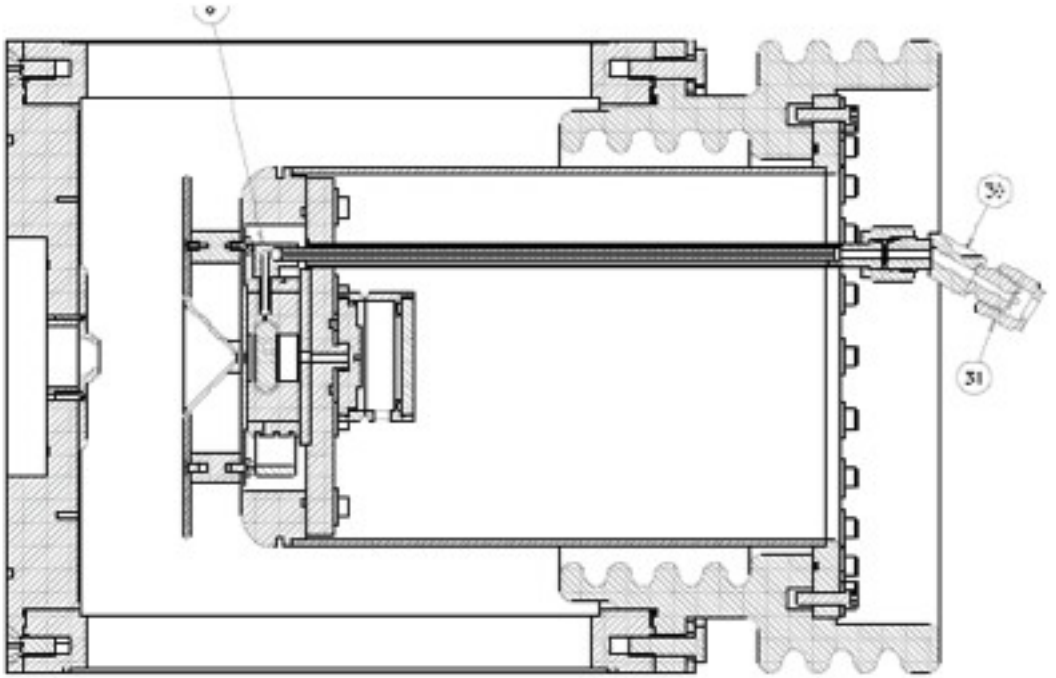
UNLESS OTHERWISE SPECIFIED	ORIGINATOR
± ± ±	DRAWN
	CHECKED
1. BREAK ALL SHARP EDGES MAX.	APPROVED
2. DO NOT SCALE DRAWING. 3. DIMENSIONS BASED UPON ASME Y14.5M-1994. 4. MAX. ALL MACH. SURFACES	USED ON
	MATERIAL
5. DRAWING UNITS: U.S. INCH	

FERMI NATIONAL ACCELERATOR LABORATORY
UNITED STATES DEPARTMENT OF ENERGY

SCALE	DRAWING NUMBER	SHEET	REV
	. — —	1 OF 1	
CREATED WITH :		GROUP :	

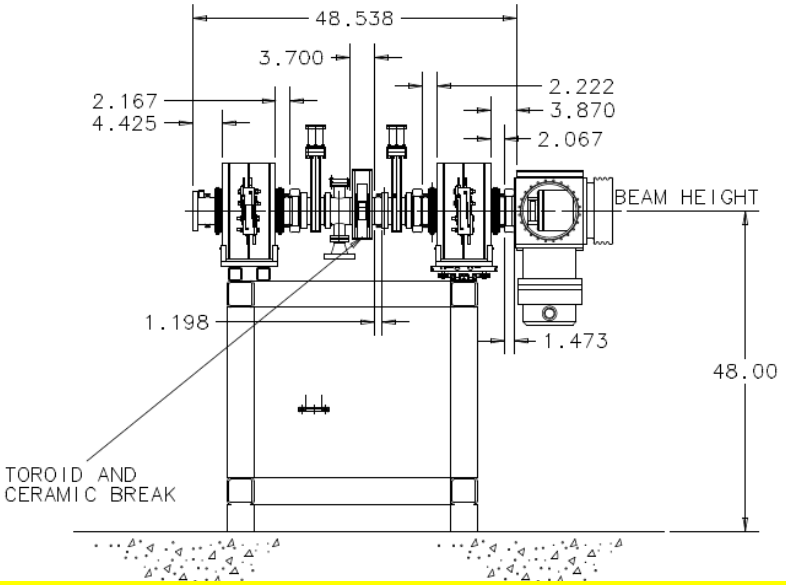
Source Status





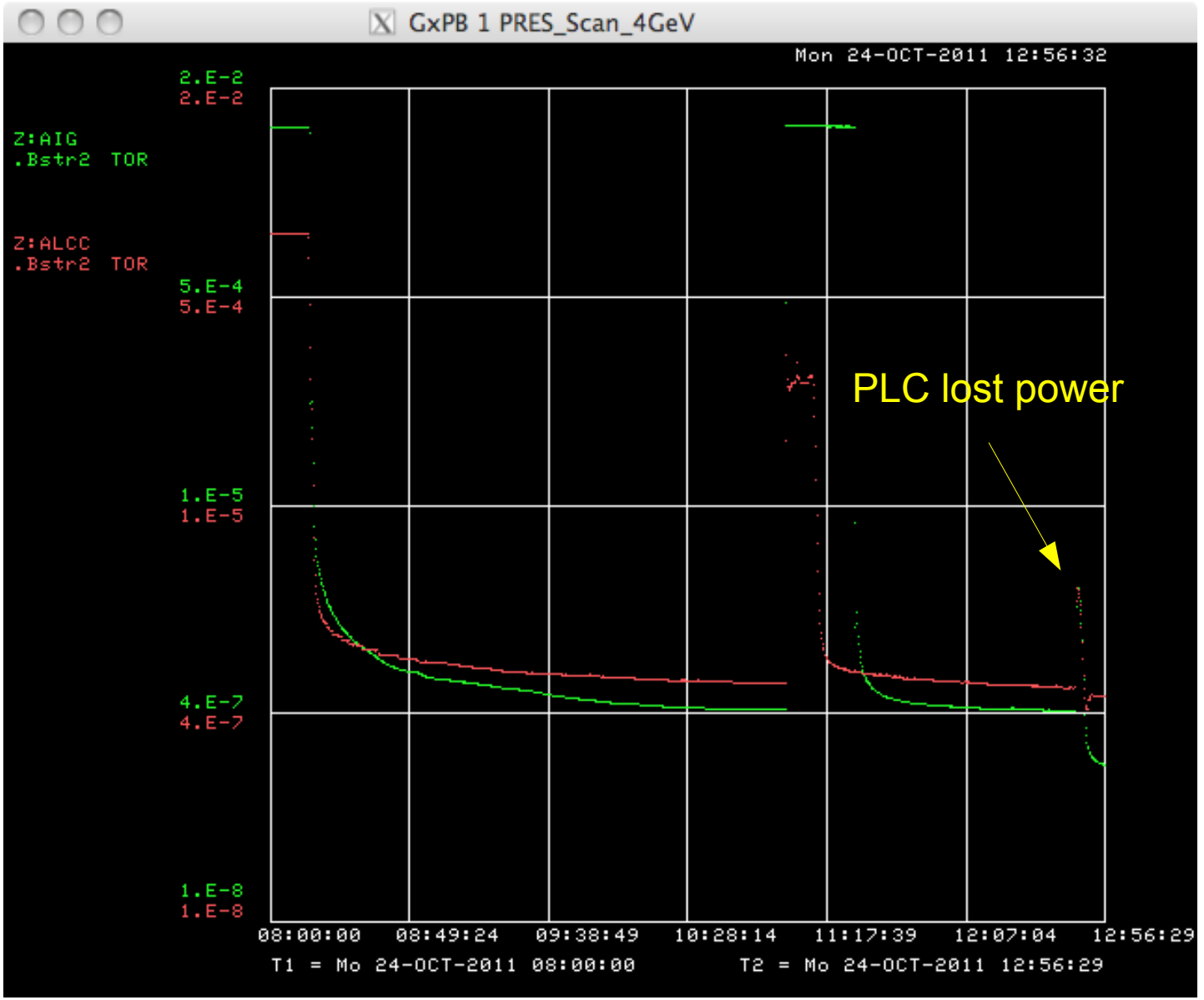
Device	Status	Comments
HV rack	cabling	

LEBT Status



Device	Status	Comments
Solenoids PS	Powered OK	200A test ok!
New slide	being designed	Expect to have by end of Feb 2012
Chopper box	with drafter	
Correctors		End of Oct delivery (03 Oct)
Solid state switches	Have PO	Expect to be delivered 1st week of November
Solenoid #4	Potted	Waiting for measurements. Klixons installed 06 Oct

Vacuum Pressure in Cube and Line



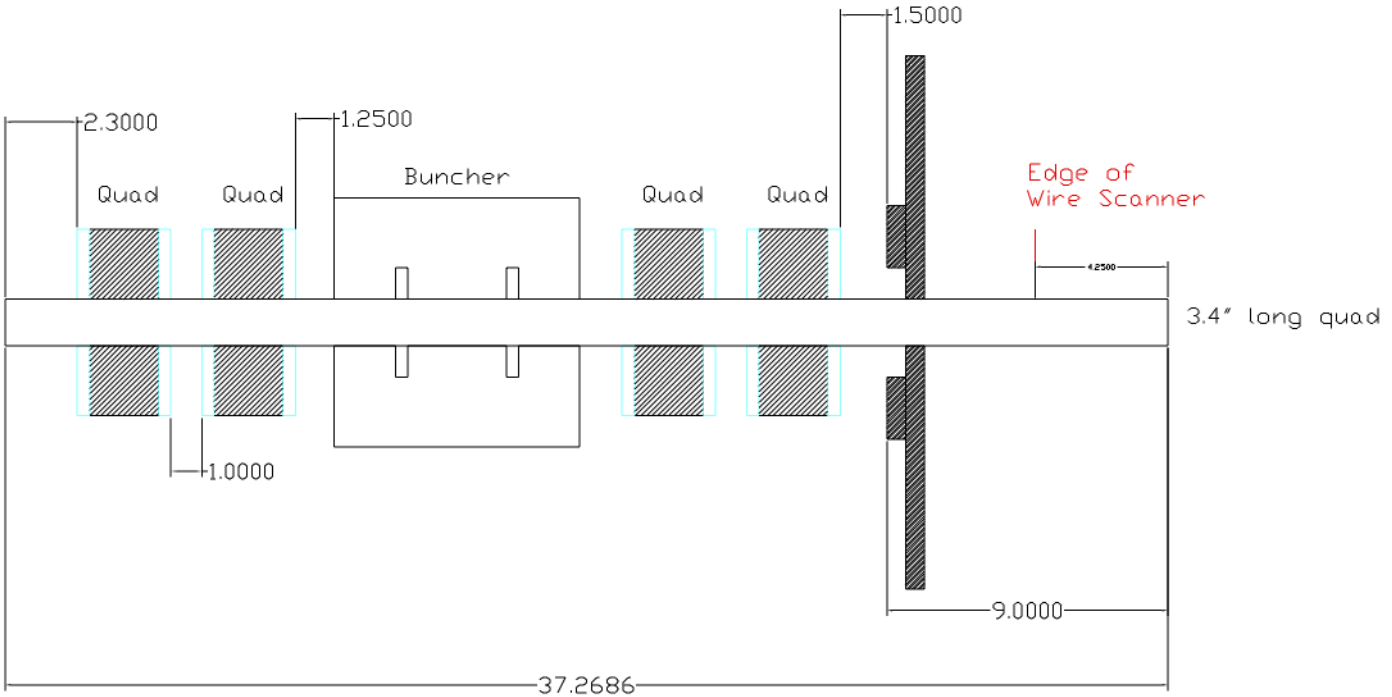
5 hours of pumping (Friday 21 Oct)

Cube 1.6e-7 torr
Line 1e-6 torr

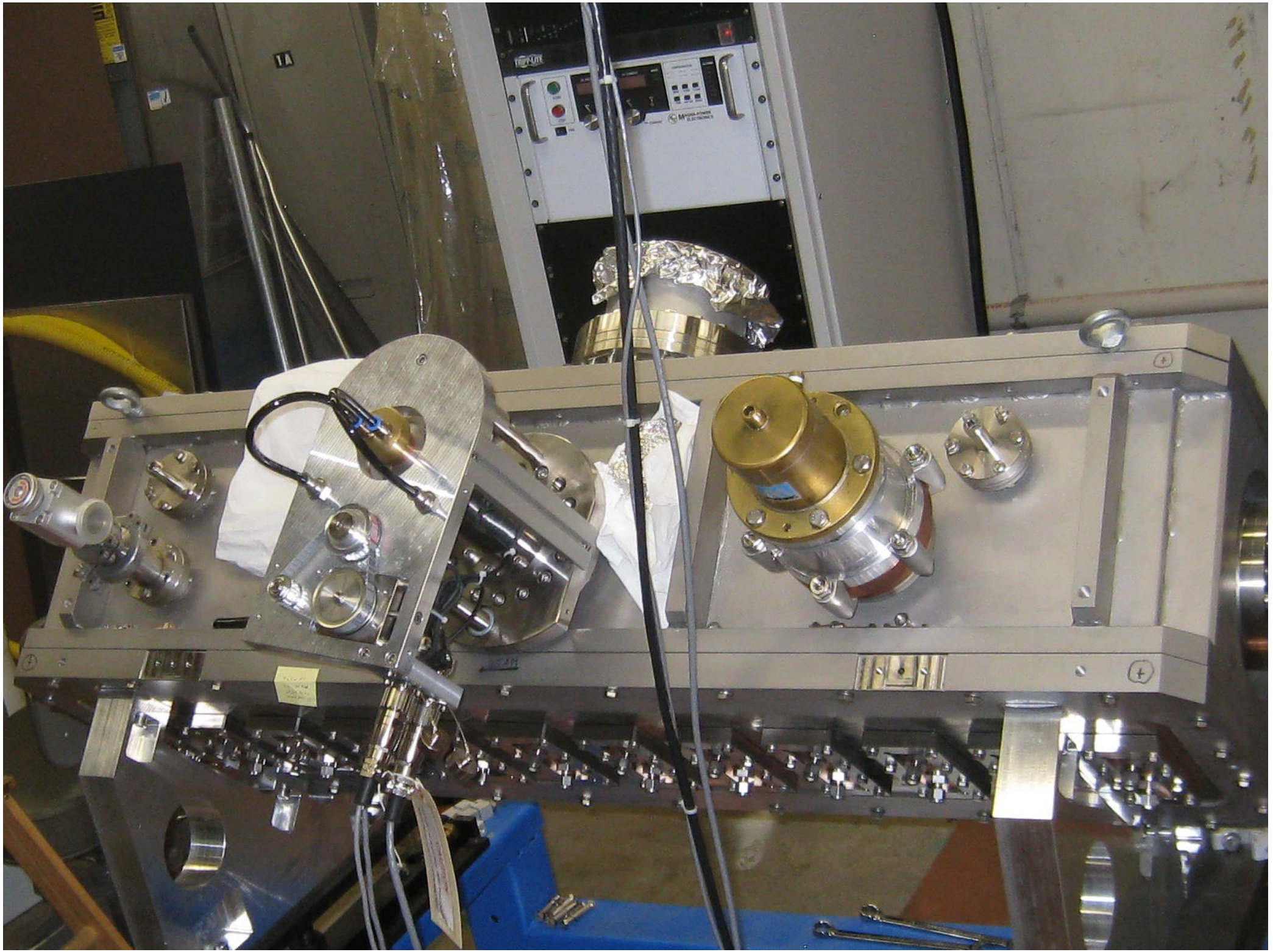
Roughing pump over the weekend:

With 1 pump on 24 Oct, got down to 4e-7 in cube.
Line 5e-7 in line. (water?)

MEBT Status

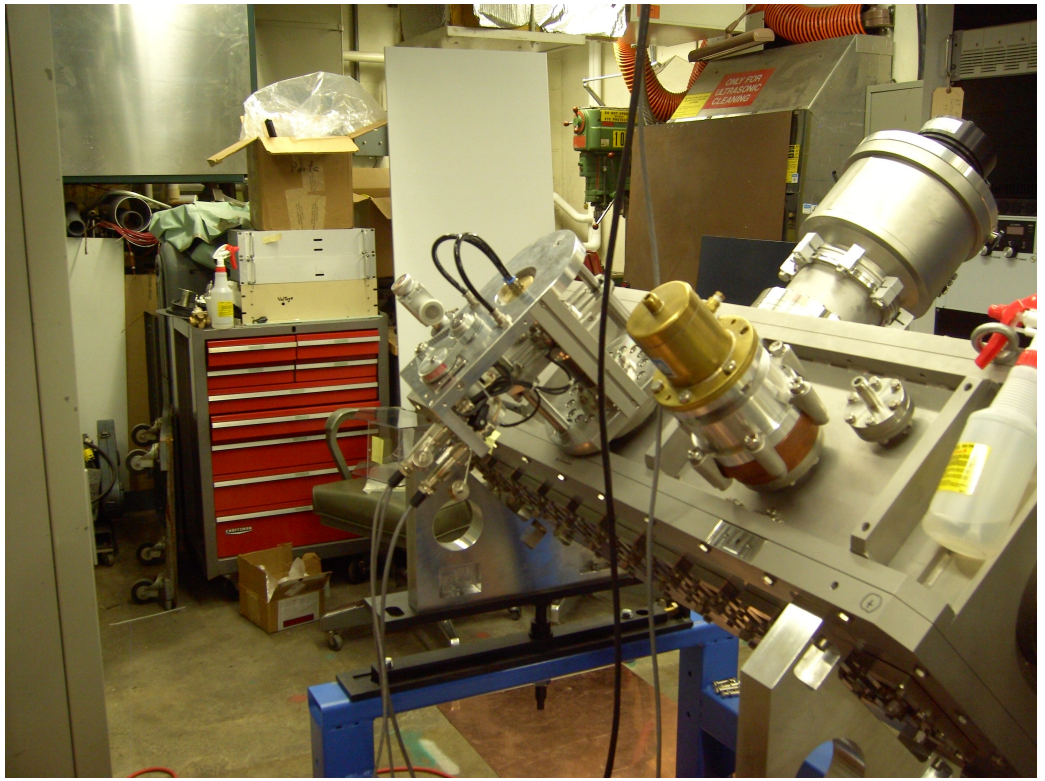


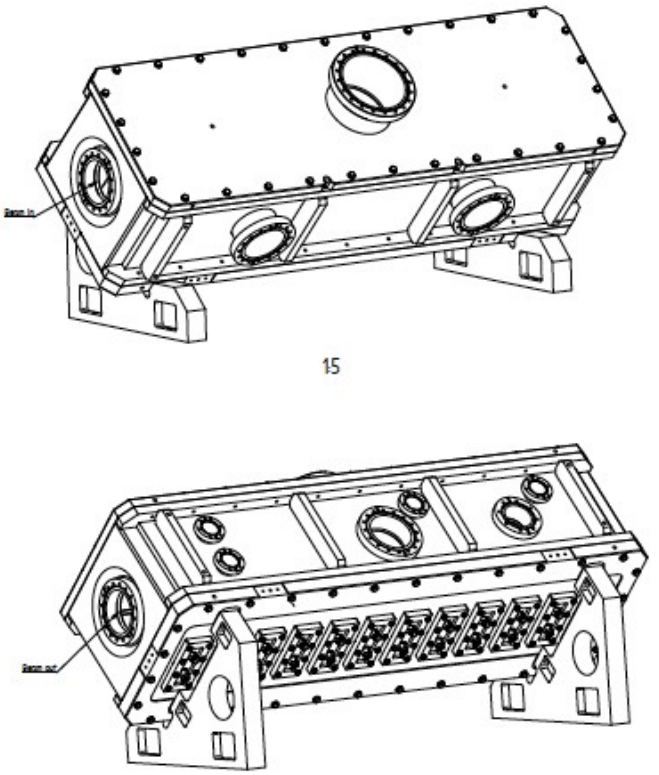
Device	Status	Comments
Quads	**Being measured (03 Oct)**	**First wire measurements on worst quad done. (11 Oct)**
MEBT Stand	Being designed	



RFQ Status

•Problems with RFQ tuner

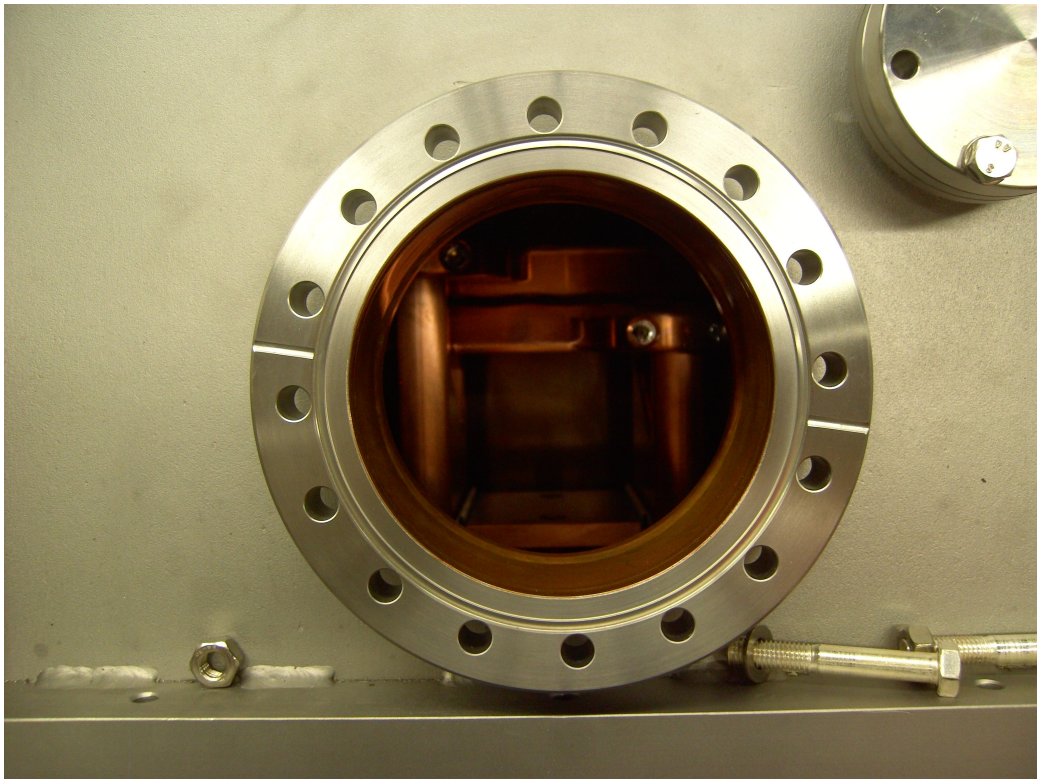




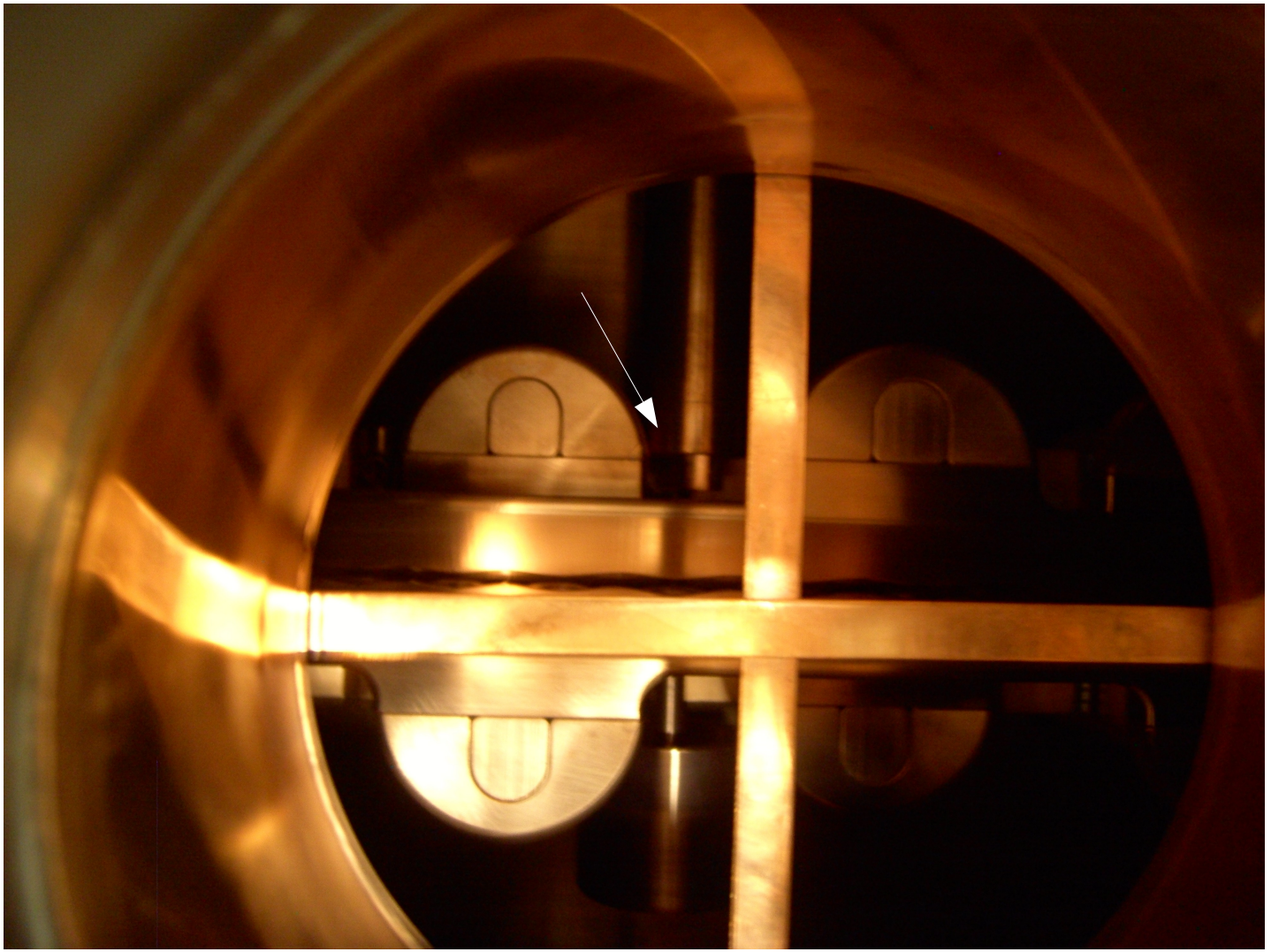
Device	Status	Comments
4816 PA	Tube changed out to a lower power one	Should be OK. Operationally < 100 kW (RFQ)+40kW (beam)

Resonant frequency CANNOT be corrected with TUNER! 201.3 MHz base resonant frequency. However can be changed … See next slide

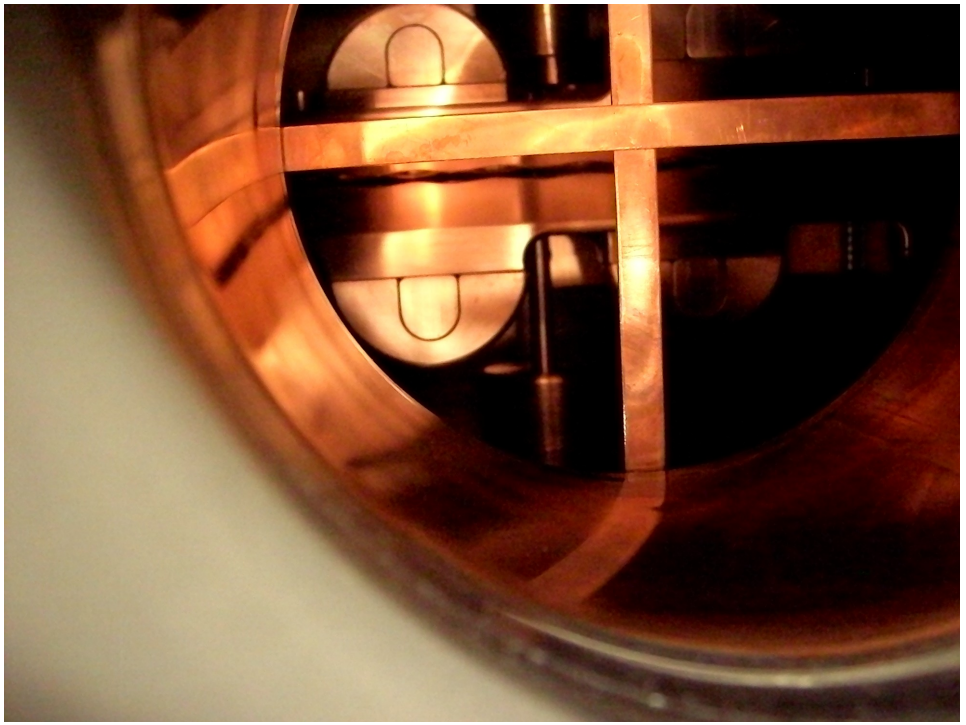
Tuner assembly



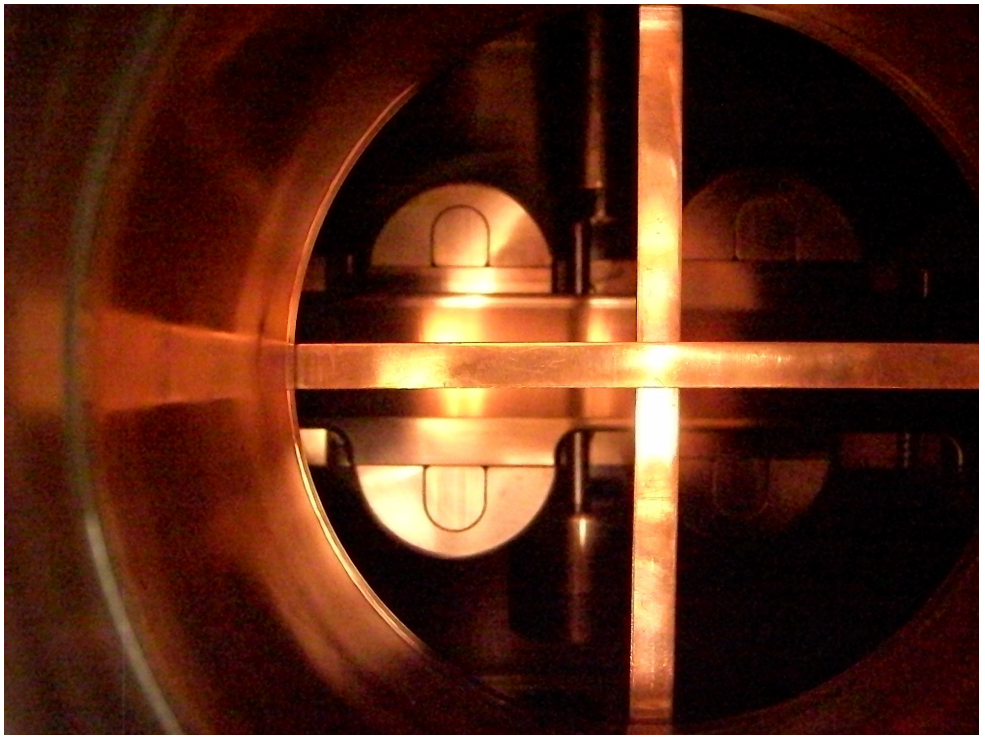
Tuner mechanism touching rod holders



Tuner rod assembly touching rod holders!



Plunger in this position gives 201.35 MHz resonance. Extended FAR from the rods.



Plunger in this position gives 201.5 MHz. Closer to the rods.

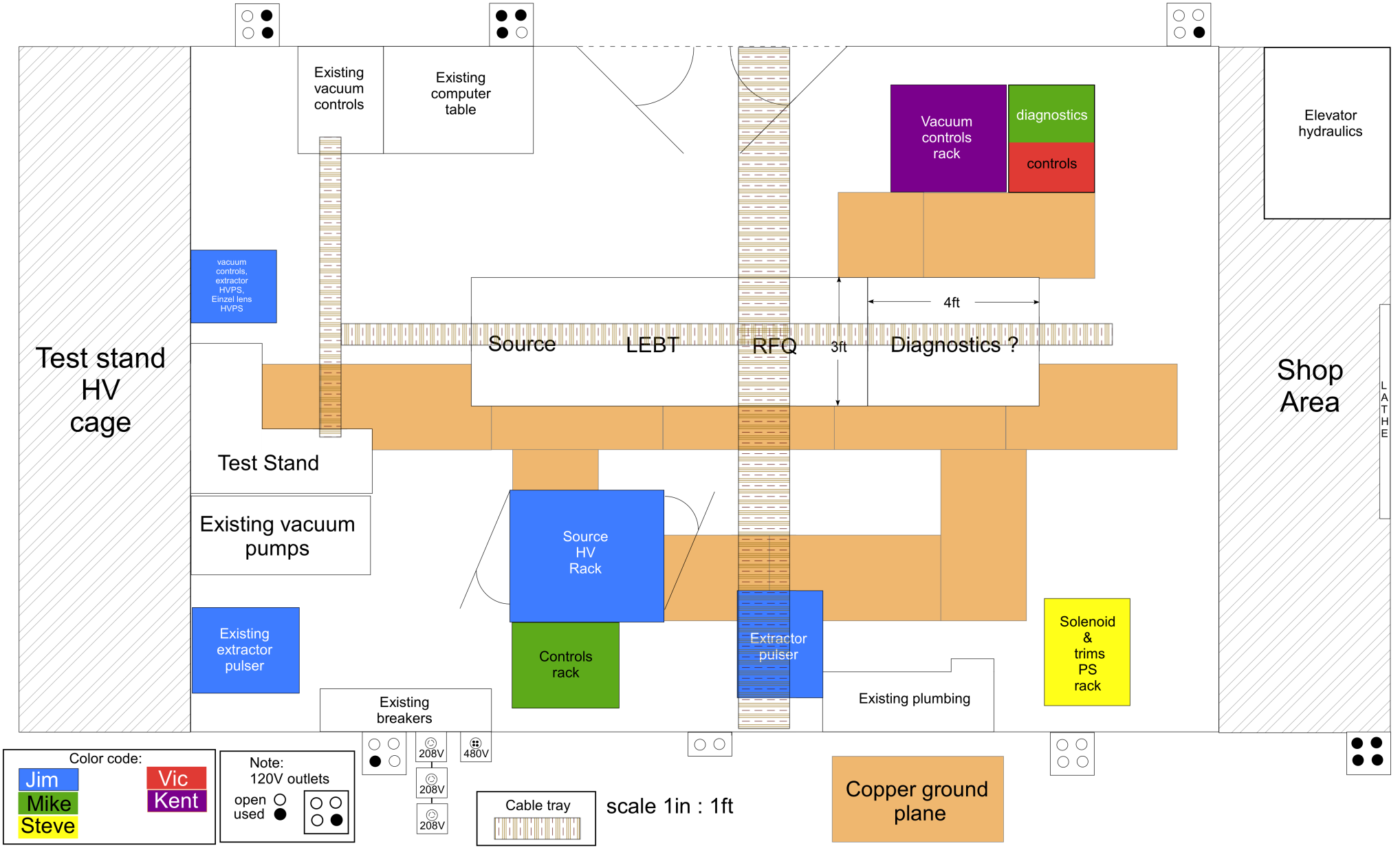
All is not lost ...

“ … there are different reasons, why the frequency could have changed. Maybe it´s caused by some vibrations during the transport or just a kind of relief in tensions of the contacts of the tuning plates.

Whatever, we knew that the frequency was already very close to the 201.25 MHz. That’s why we have put two extra distance cylinders, into the package. They can be used to lower the resonance frequency. For that you have to exchange them in the RFQ.”

– Janet Schmidt 26 Oct 2011

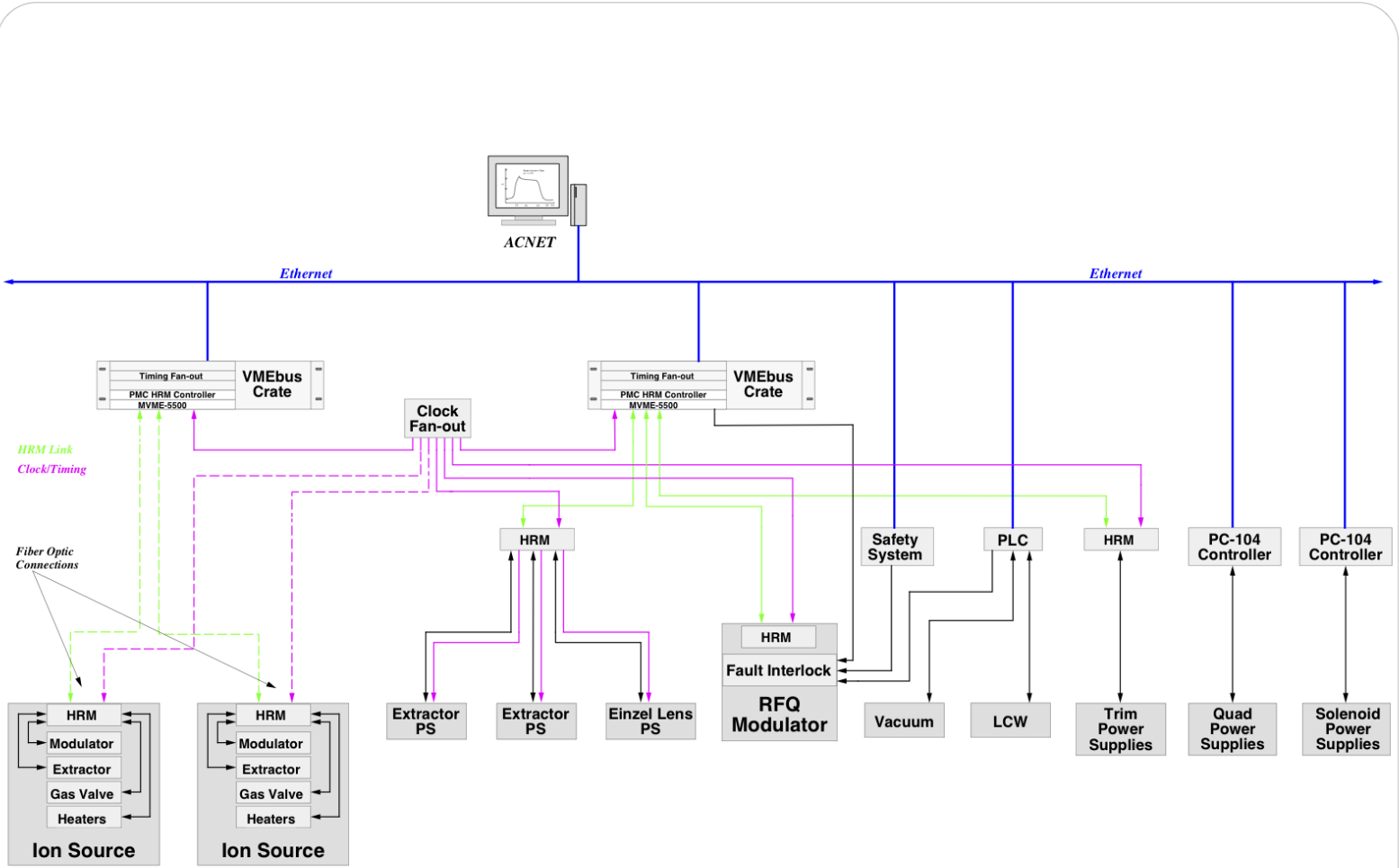
Proposed test area layout



Test area, test stand and instrumentation

Device	Status	Comments
MW can	Installed in LEBT	
MW electronics	Installed!	
emittance probes can	Can in village shop.	
Toroid and dump	Installed in LEBT	
TOF	3 BPM shells	Have vacuum tube. Buttons in Nov from A0
Faraday Cup	Needs zero length adapter	Have copper seals and zero length adapter orderred

Controls



Linac RFQ Upgrade Controls Block Diagram

Controls

- Rudimentary vacuum controls done (?).
  - Can run overnight.
- RFQ motor control via ACNET done.

Safety

- Documents submitted to safety (27 Sep)